



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,572	01/29/2007	Gidcon Livingston	PO8909US00/DEJ	4120
881 7590 08/18/2009 STITES & HARBISON PLLC 1199 NORTH FAIRFAX STREET SUITE 900 ALEXANDRIA, VA 22314				
EXAMINER				
LEON, EDWIN A				
ART UNIT		PAPER NUMBER		
2833				
MAIL DATE		DELIVERY MODE		
08/18/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,572

Applicant(s)

LEVINGSTON, GIDEON

Examiner

EDWIN A. LEON

Art Unit

2833

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 77-93 is/are pending in the application.
- 4a) Of the above claim(s) 93 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 77-85 and 87-92 is/are rejected.
- 7) ☒ Claim(s) 86 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed March 18, 2009 in which Claims 77, 90 and 93 have been amended and Claims 94-97 have been cancelled, has been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 77-83, 87-90 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Biemiller et al. (U.S. Patent No. 2,936,572). With regard to Claim 1, Biemiller discloses (in Fig. 1) a thermally compensating non-magnetic balance wheel for use in conjunction with a thermally stable non-magnetic balance spring (Column 2, Lines 1-2) in a mechanical oscillator system in a horological or other precision instrument, the balance wheel comprising: components (20, 12, 14, 16, 18) of two different non-magnetic materials having different thermal expansion coefficients, the components being arranged to give equipoise to the balance wheel and to cause a

decrease in the moment of inertia of the balance wheel with an increase in temperature, wherein the decrease in the moment of inertia is arranged to compensate for changes in the elasticity of the balance spring caused by the increase in temperature.

With regard to Claim 78, Biemiller discloses (in Fig. 1) the components include a balance wheel arm having one or more cross members (12, 14, 16, 18) and a rim (20) attached to or integral with the cross members.

With regard to Claim 79, Biemiller discloses (in Fig. 1) the cross member(s) is of a first material having a first coefficient of thermal expansion and the rim comprises concave segments of a second material having a second coefficient of thermal expansion greater than the first coefficient of thermal expansion.

With regard to Claim 80, Biemiller discloses (in Fig. 1) the balance wheel rim and cross member(s) are formed of a first material having a first coefficient of thermal expansion and the balance wheel further comprises two concave segments inside the rim, formed of a different material to the rim having a second coefficient of thermal expansion greater than the first coefficient of thermal expansion.

With regard to Claim 81, Biemiller discloses (in Fig. 1) the balance wheel rim is formed of a first material having a first coefficient of thermal expansion and two or more members formed of a second material having a second coefficient of thermal expansion greater than the first material are attached to the rim and extend inwardly therefrom.

With regard to Claim 82, Biemiller discloses (in Fig. 1) the cross member(s) is of a first material having a first coefficient of thermal expansion and the rim is of a second material having a second coefficient of thermal expansion less than the first coefficient

of thermal expansion, such that the increase in temperature causes an increase in the cross member(s) length and radially inward deflection of the rim to cause the decrease in the moment of inertia of the balance wheel.

With regard to Claim 83, Biemiller discloses (in Fig. 1) at least two appendages (44, 48) to the rim in the form of non-magnetically sensitive timing weights.

With regard to Claim 87, Biemiller discloses (in Fig. 1) the second coefficient of thermal expansion is positive and greater than the first coefficient of thermal expansion, such that the concave segments are arranged to extend further radially inward with the increase in temperature to cause the decrease in the moment of inertia of the balance wheel.

With regard to Claim 88, Biemiller discloses (in Fig. 1) a plurality of appendages (44, 48) to the concave segments in the form of non-magnetically sensitive timing weights.

With regard to Claim 89, Biemiller discloses (in Fig. 1) the first coefficient of thermal expansion is negative, such that the cross member length(s) decreases with the increase in temperature to cause the decrease in the moment of inertia of the balance wheel.

With regard to Claim 90, Biemiller discloses (in Fig. 1) a balance wheel assembly comprising: a thermally compensating non-magnetic balance wheel (Fig. 1) for use in conjunction with a thermally stable non-magnetic balance spring (Column 2, Lines 1-2) in a mechanical oscillator system in a horological or other precision instrument, the balance wheel including components (20, 12, 14, 16, 18) of two different non-magnetic

materials having different coefficients of thermal expansion, the components being arranged to give equipoise to the balance wheel and to cause a decrease in the moment of inertia of the balance wheel with an increase in temperature, wherein the decrease in the moment of inertia is arranged to compensate for changes in the elasticity of the balance spring caused by the increase in temperature; and a balance staff formed integrally with the balance wheel.

With regard to Claim 92, Biemiller discloses (in Fig. 1) the balance staff is integrally formed with one or more cross members (12, 14, 16, 18) which are arranged to support the balance wheel rim (20).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 84-85 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Biemiller et al. (U.S. Patent No. 2,936,572). With regard to Claims 84-85, Biemiller discloses substantially the claimed invention except for the second coefficient of thermal expansion being negative and the first coefficient of thermal expansion being less than 6.times.10.sup.-6K.sup.-1.

Still, it would have been obvious to one having ordinary skill in the art at the time the invention was made to for the second coefficient of thermal expansion being negative and the first coefficient of thermal expansion being less than 6.times.10.sup.-6K.sup.-1, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617, F. 2d 272, 205 USPQ 215 (CCPA 1980).

With regard to Claim 91, Biemiller discloses substantially the claimed invention except for the balance wheel and balance staff being formed of a ceramic material.

Still, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the balance wheel and balance staff being formed of a ceramic material in order to improve their non-magnetic and wear-resistant properties and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Allowable Subject Matter

6. Claim 86 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims for the reasons stated in the Office Action of October 21, 2008.

Response to Arguments

7. Applicant's arguments with respect to claims 77-92 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edwin A. León whose telephone number is (703) 308-6253. The examiner can normally be reached on Monday - Friday 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee Luebke can be reached on 571-272-2009. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edwin A. León/
Primary Examiner
Art Unit 2833